IN THE CLAIMS

The following claims listing replaces all previous claims listing.

1. (Currently amended) A method of producing a crystalline semiconductor material ~~composed of a plurality of single-crystal grains of a semiconductor~~, comprising:

(a) a first step of forming a starting material on a substrate, wherein said starting material is selected from the group consisting of amorphous semiconductor material and polycrystalline semiconductor material;~~an amorphous material of said semiconductor or a polycrystalline material of said semiconductor on a substrate; and~~

(b) a second step of forming a first crystalline material comprising crystal grains preferentially grown in the {100} orientation with respect to the vertical direction of the substrate by uniformly heat-treating said starting material ~~amorphous material or said polycrystalline material~~ by a plurality of times ~~at such a temperature as to partially melt crystal grains having a specific face orientation with respect to the vertical direction of the surface of said substrate and melt said amorphous material or crystal grains having a face orientation other than said specific face orientation.~~;

(c) a third step of forming a second crystalline material by heat-treating said first crystalline material by a plurality of times so as to ~~selectively~~ form, on said first crystalline material, ~~a temperature distribution having~~ a high temperature region and a low temperature region, ~~whose~~ wherein:

(i) the temperature of said low temperature region is lower than ~~that~~ the temperature of said high temperature region~~,~~; and

(ii) ~~wherein~~ the temperature of said low temperature region is ~~set~~ such as to partially melt said crystal grains having said specific face orientation~~.~~ with respect to the vertical direction of the surface of said substrate.

2. (Currently amended) A method of producing a crystalline semiconductor material according to claim 1, wherein said ~~semiconductor is at least one kind~~ starting material comprises at least one material selected from ~~a~~ the group consisting of silicon (Si), germanium (Ge), and carbon (C).

3. (Currently amended) A method of producing a crystalline semiconductor material according to claim 2, further comprising the step of forming a silicon oxide film between said substrate and said starting material ~~amorphous material or said polycrystalline material~~.

4. (Original) A method of producing a crystalline semiconductor material according to claim 3, wherein said face orientation is a {100} orientation.

5. (Currently amended) A method of producing a crystalline semiconductor material according to claim 1, wherein said heat-treatment in said second step is performed by irradiating said ~~amorphous material or said polycrystalline material~~ starting material with a pulse laser beam.

6. (Original) A method of producing a crystalline semiconductor material according to claim 5, wherein said pulse laser beam is an excimer laser beam.

7. (Original) A method of producing a crystalline semiconductor material according to claim 6, wherein a pulse width of said pulse laser beam is set to 150 ns.

8. (Original) A method of producing a crystalline semiconductor material according to claim 7, wherein the number of pulse laser irradiation is in a range of 10 times to 400 times.

9. (Currently amended) A method of producing a crystalline semiconductor material according to claim 1, wherein said substrate ~~is made from~~ comprises a material selected from the group consisting of ~~a~~ glass ~~material or~~ and plastic ~~material~~.

10. (Withdrawn) A method of producing a crystalline semiconductor material composed of a plurality of single-crystal grains of a semiconductor, comprising:

a first step of forming an amorphous material of said semiconductor or a polycrystalline material of said semiconductor on a substrate;

a second step of forming a first crystalline material by uniformly heat-treating said amorphous material or said polycrystalline material by a plurality of times at such a temperature as to partially melt crystal grains having a specific face orientation with respect to the vertical direction of the surface of said substrate and to melt said amorphous material or crystal grains having a face orientation other than said specific face orientation; and

a third step of forming a second crystalline material by heat-treating said first crystalline material by a plurality of times so as to selectively form, on said first crystalline material, a temperature distribution having a high temperature region and a low temperature region whose temperature is lower than that of said high temperature region, wherein the temperature of said low temperature region is set to partially melt said crystal grains having said specific face orientation.

11. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said semiconductor is at least one kind selected from a group consisting of silicon (Si), germanium (Ge), and carbon (C).

12. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 11, further comprising the step of forming a silicon oxide film between said substrate and said amorphous material or said polycrystalline material.

13. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 12, wherein said face orientation is a {100} orientation.

14. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said heat-treatment in said second step is performed by

irradiating said amorphous material or said polycrystalline material with a pulse laser beam.

15. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 14, wherein said pulse laser beam is an excimer laser beam.

16. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 15, wherein a pulse width of said pulse laser beam is set to 150 ns.

17. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 16, wherein the number of pulse laser irradiation is in a range of 10 times to 400 times.

18. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said temperature distribution is formed by modulating a pulse laser beam in one direction in said third step.

19. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said temperature distribution is formed by modulating a pulse laser beam in orthogonal two directions in said third step.

20. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said temperature distribution is formed by using a diffraction grating in said third step.

21. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein the heat-treatment in said third step is performed by irradiating said first crystalline material with a pulse laser beam.

22. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 21, wherein the pulse laser beam is an excimer laser beam.

23. (Withdrawn) A method of producing a crystalline semiconductor material according to claim 10, wherein said substrate is made from a glass material or plastic material.

24. (Currently amended) A method of fabricating a semiconductor device ~~using a crystalline semiconductor material composed of a plurality of single-crystal grains of a semiconductor,~~ comprising:

~~a first step of forming an amorphous material of said semiconductor or a polycrystalline material of said semiconductor on a substrate; and~~

~~a second step of forming a crystalline material by uniformly heat-treating said amorphous material or said polycrystalline material by a plurality of times at such a temperature as to partially melt crystal grains having a specific face orientation with respect to the vertical direction of the surface of said substrate and melt said amorphous material or crystal grains having a face orientation other than said specific face orientation.~~

(a) a first step of forming a starting material on a substrate, wherein said starting material is selected from the group consisting of amorphous semiconductor materials and polycrystalline semiconductor materials;

(b) a second step of forming a first crystalline material comprising crystal grains preferentially grown in the {100} orientation with respect to the vertical direction of the substrate by uniformly heat-treating said starting material by a plurality of times;

(c) a third step of forming a second crystalline material by heat-treating said first crystalline material by a plurality of times so as to selectively form, on said first crystalline material, a temperature distribution having a high temperature region and a low temperature region,wherein:

(i) the temperature of said low temperature region is lower than the temperature of said high temperature region; and

(ii) the temperature of said low temperature region is such as to partially melt said crystal grains having said specific face orientation with respect to the vertical direction of the surface of said substrate.

25. (Currently amended) A method of producing a semiconductor device according to claim 24, wherein said ~~semiconductor is at least one kind~~ starting material comprises a material selected from a group consisting of silicon (Si), germanium (Ge), and carbon (C).

26. (Currently amended) A method of fabricating a semiconductor device according to claim 25, further comprising the step of forming a silicon oxide film between said substrate and said starting material ~~amorphous material or said polycrystalline material~~.

27. (Original) A method of fabricating a semiconductor device according to claim 26, wherein said face orientation is a {100} orientation.

28. (Currently amended) A method of fabricating semiconductor device according to claim 24, wherein said heat-treatment in said second step is performed by irradiating said ~~amorphous material or said polycrystalline material~~ starting material with a pulse excimer laser beam.

29. (Withdrawn) A method of fabricating semiconductor device using a crystalline semiconductor material composed of a plurality of single-crystal grains of a semiconductor, comprising:

a first step of forming an amorphous material of said semiconductor or a polycrystalline material of said semiconductor on a substrate;

a second step of forming a first crystalline material by uniformly heat-treating said amorphous material or said polycrystalline material by a plurality of times at such a temperature as to partially melt crystal grains having a specific face orientation with respect to the vertical direction of the surface of said substrate and to melt said amorphous material or crystal grains having a face orientation other than said specific face orientation; and

a third step of forming a second crystalline material by heat-treating said first crystalline material by a plurality of times so as to selectively form, on said first crystalline material, a temperature distribution having a high temperature region and a low temperature region whose temperature is lower than that of said high temperature region, wherein the temperature of said low temperature region is set to partially melt said crystal grains having said specific face orientation.

30. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein said semiconductor is at least one kind selected from a group consisting of silicon (Si), germanium (Ge), and carbon (C).

31. (Withdrawn) A method of fabricating a semiconductor device according to claim 30, further comprising the step of forming a silicon oxide film between said substrate and said amorphous material or said polycrystalline material.

32. (Withdrawn) A method of fabricating a semiconductor device according to claim 31, wherein said face orientation is a {100} orientation.

33. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein said temperature distribution is formed by modulating a pulse laser beam in one direction in said third step.

34. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein said temperature distribution is formed by modulating a pulse laser beam in orthogonal two directions in said third step.

35. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein the temperature distribution is formed by using a diffraction grating in said third step.

36. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein the heat-treatment in said second step is performed by irradiating said amorphous material or said polycrystalline material with a pulse excimer laser beam.

37. (Withdrawn) A method of fabricating a semiconductor device according to claim 29, wherein the heat-treatment in said third step is performed by irradiating said first crystalline material with a pulse excimer laser beam.

38. (New) A method of producing a crystalline semiconductor material according to claim 1, wherein said temperature distribution is formed by modulating a pulse laser beam in one direction in said third step.

39. (New) A method of producing a crystalline semiconductor material according to claim 1, wherein said temperature distribution is formed by modulating a pulse laser beam in orthogonal two directions in said third step.

40. (New) A method of producing a crystalline semiconductor material according to claim 1, wherein said temperature distribution is formed by using a diffraction grating in said third step.

41. (New) A method of fabricating a semiconductor device to claim 24, wherein said temperature distribution is formed by modulating a pulse laser beam in one direction in said third step.

42. (New) A method of fabricating a semiconductor device according to claim 24, wherein said temperature distribution is formed by modulating a pulse laser beam in orthogonal two directions in said third step.

43. (New) A method of fabricating a semiconductor device according to claim 24, wherein said temperature distribution is formed by using a diffraction grating in said third step.